

ABSTRACT

An object of the invention is to reduce the beam drift in which the orbit of the charged particle beam is deflected by a potential gradient generated by a nonuniform sample surface potential on a charged-particle-beam irradiation area surface, the nonuniform sample surface potential being generated by electrification made when observing an insulating-substance sample using a charged particle beam.

Energy of the charged particle beam to be irradiated onto the sample is set so that generation efficiency of secondary electrons generated from the sample becomes equal to 1 or more. A flat-plate electrode (26) is located in such a manner as to be directly opposed to the sample. Here, the flat-plate electrode is an electrode to which a voltage can be applied independently, and which is equipped with a hole through which a primary charged particle beam can pass. Furthermore, a voltage can be applied independently to a sample stage (12) on which the sample is mounted. Here, the sample stage's surface directly opposed to the sample is formed into a planarized structure with no projections and depressions thereon. Also, diameter D of the hole provided in the flat-plate electrode (26) and distance L between the flat-plate electrode (26) and the sample are set such that a relation of $D/L \leq 1.5$ is satisfied.